The Pakistan Development Review
30 : 4 Part II (Winter 1991) pp. 1051 – 1064

Commodity Taxation and Input Subsidies in Pakistan's Agriculture: A Preliminary Analysis

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1. INTRODUCTION

It has been argued in the literature that capital formation is the key to economic development. Apart from expansion in productive capacity, capital formation is also a source of embodied technical change and progressive modernization. Although aid could be a source of capital formation, it is undependable and inconsistent with the phrase that capital is made at home [Nurkse (1953)]. Agriculture, being a sector of major proportions in developing countries holds a pivotal position as a major contributor to capital formation. In the early stages of economic development, it must fund industrialization, finance capital imports and act as a ready market for industrial goods. It may, however, be remembered that agriculture can play this role only within certain limits and that excessive resource transfers from agriculture can prove to be self-defeating and must be avoided [Timmer (1988)].

What has been the role of Pakistan's agriculture in this respect, is a controversial issue. There are studies [Hamid (1970); Khan (1985) and Qureshi (1987)] that hold that agriculture's role in capital formation in Pakistan has, at best, been dismal. Others [Chaudhry (1973); Government of Pakistan (1986, 1988)] have argued that agriculture in Pakistan was heavily taxed and made significant contributions to economic development. The controversy arises as the former set of studies dealt with direct taxes alone as against the coverage of local and indirect taxes and taxes implicit in price and exchange rate policies in the latter. While non-availability of ready estimates of these taxes is the principal cause of this exclusion, it certainly would lead to considerable underestimation of taxes on agriculture especially under the growing government emphasis in the recent years on local finance, indirect taxes and interventionist price policy for

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Authors' Note: We are highly indebted to Dr Gary Ender of USAID for many fruitful discussions and supply of latest literature on the subject. Despite the identity of the title, this paper is an abridged version of a detailed paper by the same authors [Chaudhry and Kayani (1991)].

agriculture.

Given this state of affairs, the purpose of the present paper is to quantify the magnitude of taxes inherent in agricultural prices. Although a comprehensive coverage of all the taxes on agriculture, would have been more desirable, it was not possible due to limitations of space, resources and available data. The same limitations also restricted the analysis to wheat, rice, cotton and sugarcane as against all commodities and to a twenty-year period of 1970-71 to 1989-90. The paper's outline spans of five sections including the present one. While Section 2 highlights the methodology, Section 3 is a presentation of results and offers estimates of taxes and subsidies implicit in agricultural price policy. The discussion in Section 4 is centred on tax burdens in agriculture relative to those in Pakistan along with implications for agricultural output, agricultural income tax and institutional credit. Section 5 narates the summary and conclusions of the paper.

2. APPROACHING THE PROBLEM

Three aggregate measures of support have commonly been used in the literature to quantify the magnitude of taxes and subsidies arising out of government intervention in the agricultural commodity markets. They include nominal protection coefficients (NPCs) effective protection coefficients (EPCs) and producer subsidy equivalent (PSE) [Wainio *et al.* (1988) and Scandizzo and Bruce (1990)]. The NPC is theoretically the simplest and the earliest used measure and is expressed as a ratio of domestic to world prices. The EPC is also a ratio and depicts the relationship between value-added at domestic producer prices to value-added at world prices. The PSE is often expressed in terms of total value of subsidy as a percentage of adjusted producer income. Put slightly differently, the PSEs compare import or export parity prices with domestic prices for calculation of taxes and subsidies [Ender (1989)].

It can be perceived from the above that the three measures are not totally different but represent alternatives. They are all characterised by a common methodology. Each makes use of domestic and world prices and each relies on many of the same calculation procedures. But nonetheless each tells a different story because of varying built-in-coverage of various government programmes. For example, both EPCs and PSEs provide a built-in coverage to input subsidies but the NPCs do not. Similarly marketing subsidies, long-term production programmes, direct income supports and exchange rate controls are an integral part of PSEs but cannot be accounted for in NPCs and EPCs.

The three measures being alternatives, the analysis of this paper is based on NPCs. Apart from their theoretical simplicity, NPCs could be calculated without information on world prices of agricultural inputs and their use was motivated by lack of such data. As exchange rate policy is outside the scope of this paper and direct income support programmes are uncommon in Pakistan, there was no need to indulge in EPCs and PSEs. The limitation of NPCs to deal endogenously with transport subsidies can be overcome by defining the concept as a ratio of domestic and import or export parity prices [Appleyard (1986)]. Input subsidies and exchange rate controls could be treated separately.

Although less impinging than the other two measures, the data needs of NPCs are by no means small. Apart from price data at world and domestic levels, data on production and marketed surplus are also needed for tax calculations. The calculation of import and export parity prices immediately involves adjustment of c.i.f. import and f.o.b. export prices with costs of transporting the commodity between the farm and the port. Similarly as exportables and importables differ from raw farm products, the use of conversion factors and processing costs becomes inevitable to bring world prices at par with farm prices. Although consistent time-series data on many of the above variables were lacking, some limited information was available in Appleyard (1986) and Ender (1989). Using this information, time-series data for the entire twenty-year period were generated through the use of various price indices [Chaudhry and Kayani (1991)].

3. ANALYSIS OF IMPLICIT COMMODITY TAXES AND SUBSIDIES

The discussion of this section follows from the presentation of NPCs for agricultural commodities and the implications of their inter-temporal trends for commodity tax rates. These commodity tax rates are then aggregated into implicit taxes in agriculture.

Nominal Protection Coefficients

As should be clear from the preceding section, nominal protection coefficients for the purposes of this study were defined by a ratio between domestic prices and the import or export parity prices. This was considered necessary to keep the price effect of transportation and processing costs separate from that of taxes and subsidies. The computational details of estimating import or export parity prices and for that matter of nominal protection coefficients are given in Chaudhry and Kayani (1991). Table 1 below reports on the estimated nominal protection coefficients from 1970-71 to 1989-90 for various crops.

Table 1

Nominal Protection Coefficients of Various Crops 1970-71 to 1989-90

Years	Cotton	Rice (Basmati)	Rice (IRRI)	Sugarcane	Wheat
1970-71	1.03	0.96	0.78	0.50	0.94
1971-72	0.47	0.57	0.49	0.64	0.88
1972-73	0.56	0.39	0.40	0.73	0.63
1973-74	0.41	0.30	0.20	0.45	0.48
1974-75	0.58	0.29	0.23	0.37	0.49
1975-76	0.69	0.40	0.44	0.44	0.56
1976-77	0.54	0.59	0.71	0.76	0.56
1977-78	0.82	0.52	0.81	0.76	0.63
1978-79	0.75	0.31	0.59	0.78	0.64
1979-80	0.70	0.34	0.58	0.47	0.70
1980-81	0.64	0.40	0.51	0.49	0.59
1981-82	0.83	0.36	0.53	0.61	0.54
1982-83	0.72	0.39	0.88	0.87	0.60
1983-84	0.61	0.40	0.90	0.95	0.46
1984-85	0.63	0.33	0.75	1.73	0.52
1985-86	0.78	0.30	1.13	1.19	0.65
1986-87	0.74	0.30	1.18	1.53	0.53
1987-88	0.48	0.37	0.88	1.85	0.54
1988-89	0.50	0.38	0.61	1.43	0.54
1989-90	0.48	0.40	0.50	0.58	0.48

Source: [Chaudhry and Kayani (1991)].

While the value of NPCs was close to unity in the beginning year of the 1970s, it plummetted to the lowest levels in 1974-75. Between 1974-75 and 1979-80 domestic farmgate prices of most commodities relative to parity prices witnessed a rise. Although the NPCs for wheat rose consistently over this period, those for cotton, rice and cane fell after a peak in 1977-78. The ratios of domestic to international parity prices for IRRI rice and sugarcane were consistently higher for the years between 1979-80 and 1984-85 but fluctuated over the period to settle at a lower level in 1984-85 relative to 1979-80 in the case of cotton, *Basmati* rice and wheat. In the subsequent period of 1984-85 to 1989-90, most of the nominal

protection coefficients exhibited a mixed trend over the years but the domestic prices of most commodities were only half of those of international prices in the terminal year of 1989-90 with the lowest and highest range of 40 percent in case of *Basmati* rice and 58 percent in the case of sugarcane.

Implicit in the estimated nominal protection coefficients is the rate structure of commodity taxes which could be estimated by subtracting the NPCs from unity. It is common sense that the taxes on a commodity will be negative, zero, or positive, as the respective values of the estimated coefficients exceed, are equal to, or fall short of unity. On this scale prices of wheat and rice *(Basmati)* over the entire twenty-year period involved varying tax rates. This was also true of seed cotton except during a single year, 1970-71. Negative tax rates of 13–18 percent appeared during 1985-86 and 1986-87 in case of rice (IRRI) and of 19–85 percent from 1984-85 to 1988-89 in case of sugarcane. Depending on the period under consideration, the positive tax rates were of the order of 17–53 percent for cotton, 4–71 percent for rice *(Basmati)* 10–18 percent for rice (IRRI), 5–51 percent for sugarcane and 6–52 percent for wheat.

Although the domestic commodity prices rose with the passage of time, the increases were slower than international prices. Thus the variation in the rate structure of taxes on various commodities, has been solely the result of fluctuations in the world prices of these commodities. The rising costs of transportation and processing and a constantly falling Rupee especially in the Eighties were other factors that affected the rate structure of implicit commodity taxes from time to time.

Magnitude of Implicit Taxes in Agriculture

Although the rate structure of implicit taxes for various commodities gives a fairly good idea of taxes in agriculture, it fails to depict the exact magnitude of such taxes. This would be especially true under the simultaneous existence of positive and negative tax rates for various commodities. It is, therefore, essential to quantify total implicit taxes in agriculture. The exercise would also permit the study of these taxes net of input subsidies. The calculation of magnitude of implicit taxes is simply the product of price differences between international and domestic prices of various commodities and their respective marketed quantities. Since the prices of cane-based farm products are not fixed, cane used for this purpose is excluded from our estimates and cane crushed by sugar mills is equated to output marketed by the farm sector. The results of this exercise are presented in Table 2 with additional information on their relationship to value-added by

Table 2

Implicit Taxes and Subsidies in Agriculture, 1970-71 to 1989-90

(Million Rupee)

Years	Implicit Taxes	Input Subsidies	Taxes Net of Subsidies	Value-added by Agriculture at Current Factor Cost	Net Taxes as Percent of Value-added by Agriculture	Overall Tax Rate in Pakistan
1970-71	521.85	–	–	16236	–	12.7
1971-72	1280.81	–	–	17934	–	13.56
1972-73	1236.14	345	891.14	21907	4.97	12.37
1973-74	4532.99	351	4181.99	28084	14.89	13.47
1974-75	5028.75	454	4574.75	33533	13.64	12.80
1975-76	3844.38	1012	2832.38	38338	7.39	13.28
1976-77	3801.38	914	2887.36	43968	6.57	13.28
1977-78	2283.11	1160	1123.11	50567	2.22	14.05
1978-79	3403.97	1983	1420.97	54147	2.62	14.66
1979-80	5458.17	2723	2735.17	62164	4.40	15.25
1980-81	8433.92	2479	5954.92	76399	7.80	15.66
1981-82	9893.53	1826	8067.53	92216	8.75	14.96
1982-83	6427.30	1980	4447.30	99380	4.48	14.67
1983-84	9665.40	1690	7975.40	104550	7.63	15.69
1984-85	6465.54	1501	4964.54	121293	4.09	14.87
1985-86	4917.37	2424	2493.36	128801	1.94	15.27
1986-87	10561.42	1142	9419.42	135308	6.96	16.11
1987-88	12909.96	2190	10719.96	156375	6.86	16.32
1988-89	13751.80	1400	12351.80	185498	6.66	17.46
1989-90	28036.31	2100	25,936.41	205980	12.59	17.38

Source: [Government of Pakistan (1990) and Chaudhry and Kayani(1991)].

agriculture and consolidated tax and non-tax receipts of federal and provincial governments as a percentage of gross national product of Pakistan.

It is clear from Table 2 that implicit taxes, by no means, involved small amounts of resource transfers from agriculture. Gross implicit taxes were of the order of Rs 0.5 billion in 1970-71 but rose to Rs 28.0 billion in 1989-90. A similar picture emerges in respect of implicit taxes net of budgetary subsidies on fertilizers, tubewells, pesticides and seeds.[1] Although net taxes amounted to Rs 0.9 billion

[1]I understand that use of economic subsidies would have been more appropriate than budgetary subsidies. The nonavailability of world prices of these inputs and their cost structure makes it impossible to come up with estimates of economic subsidies on agricultural inputs.

in 1972-73, they stood at Rs 25.9 billion in 1989.90. These figures correspond with annual growth rates of 22.0 percent and 20.6 percent respectively for gross and net implicit taxes. It, therefore, seems naive to argue that taxes in agriculture failed to keep pace with the rise in agricultural productivity, or, for that matter, in agricultural incomes. Net implicit taxes as a percentage of the value-added by agriculture, like the rate structure, varied considerably from time to time with lower and upper bounds of 1.9 percent and 12.6 percent. These percentages compare with the overall tax rates of 12.4–17.5 percent in Pakistan between 1970-71 and 1989-90.

The comparison of implicit taxes in agriculture with overall tax rates in Pakistan suggests that tax burdens in agriculture by Pakistani standards, were really heavy during some of the years. It needs to be pointed out, however, that even the lowest rates of implicit taxes in agriculture compare favourably with overall tax rates of Pakistan's economy for the following reasons. First, implicit tax rates as reported in the above table are net of resource transfers into agriculture but the same deductions have not been made from the overall tax rates. Second, we considered only one source of taxes in agriculture against the inclusion of all the revenue sources reflected in the overall tax rates. Finally and more importantly, agricultural income was one-half to one-third and agricultural's taxable capacity only one-tenth of those in the non-agricultural sector between 1970-71 and 1989-90 [Qureshi (1987)]. Looked at in this perspective even the lowest implicit tax rates in agriculture would represent over-taxation of agriculture.

Despite the immense resource transfers from agriculture, there is little recognition in Pakistan that agriculture may be over-burdened with taxes. The underlying reason for overlooking this fact is the exclusion of a major part of implicit taxes from government budgets. Only cotton export duties and profits of cotton and rice export corporations are reported in government budgets. But a major proportion of these taxes that accrues to consumers as food subsidies and to industrialists in the form of low raw material prices [Gotsch and Brown (1980)] is generally overlooked. It is this anomaly which results in the misgiving that agriculture makes little contribution to government revenues.

4. IMPLICATIONS FOR AGRICULTURAL DEVELOPMENT AND POLICY

There is a general agreement in the literature that resource transfers from agriculture hold the key to rapid transformation and modernization of tradition-bound economies of the world. It may, however, be noted that resource mobiliza-

tion through underpricing of agricultural commodities is one of the most inefficient ways of accomplishing the task as it interferes with comparative advantage theory and sustainable process of economic development in many ways. First, low prices of agricultural commodities underestimate agriculture's contribution to the national economy and result in serious flaws in the planning, management and allocation of funds to agricultural development. Second, the underpricing of agricultural commodities corresponds directly with low-farm incomes, low-farm profits and distortion of private incentives with adverse effects on the growth of agricultural output and the output of the national economy [Bale (1985) and [Krueger *et al.* (1988)]. The available estimates of aggregate price elasticity of supply with respect to output [Ali (1990)], and current levels of domestic and world prices, suggest a nearly 30 percent annual loss in agricultural output. Third, because of backward and forward linkages, such huge losses of agricultural production would be coterminous with similar losses in the output of other sectors. To the extent that the productive capacity of the economy is undermined, import dependence and unemployment remain growing problems. Finally, while the lack of productive employment opportunities is one of the major sources of income inequalities, the indiscriminate use of price policy for resource mobilization from agriculture adds a special dimension to the problem. Inter-farm income differences and differences in investment ability are accentuated by the regressive impact of price policy on small farms. Although urban incomes tend to be higher than rural incomes, the policy of low agricultural commodity prices would lead to the widening of urban-rural income differentials. The same is likely to happen within the urban areas as the industrialists benefit doubly from this policy, first as users of agricultural raw materials and then as consumers of food.

It follows from the above that agricultural price policy in Pakistan has been directly opposed to the goals of economic development and that it needs to be amended to ensure a more rapid progress, greater employment and better income distribution than have hitherto been achieved. The most efficient way to accomplish this task is to set agricultural commodity prices on a par with import and export parity prices of various agricultural commodities. To dampen the effect of wide fluctuations in international prices of primary commodities and to ensure stability of prices at home, domestic farm prices should be determined by trend lines so that they are higher than world prices during periods of low international prices and lower than world prices during periods of high world prices. As the fluctuations around the trend would be cancelled out over time, the prices so fixed would be consistent with zero implicit taxes in Pakistan.

It has been noted above that underpricing of agricultural commodities is one of the highly regressive and inequitable systems of taxing agriculture. It is commonly recommended in Pakistan that the general income-tax system should be extended immediately to agriculture as well. The recommendation is made without any emphasis on the need for repealing implicit taxes in agriculture. Taken at its face such a recommendation is likely to make agricultural taxes more oppressive. Since implicit taxes involve huge amounts, an extension of income tax to agriculture, despite its desirability, would accomplish little in promoting progressive rates of taxes in agriculture. This, however, is not to suggest that income tax should not be extended to agriculture but only that it should, if at all, be done after appropriate changes in agricultural prices.

The removal of implicit taxes will obviate the need for arranging elaborate institutional credit for agriculture. As special arrangements for agricultural credit are associated with huge social costs in terms of institutional fees, establishment costs and service charges with a disproportionate accrual of the principal to large farmers, their discontinuation will save billions of Rupees each year for investment elsewhere. Although some farmers may still be in need of credit after the withdrawal of special arrangements, they could be productively served by commercial banks at nominal costs to the society.

5. SUMMARY AND CONCLUSIONS

The purpose of the present paper has been to quantify and to discuss the implications of implicit taxes in Pakistan's agriculture. The methodology of the paper consisted of defining the import and export parity prices of major agricultural commodities grown in Pakistan and to compare them with domestic procurement prices. Although the analysis covered only four commodities, implicit tax rates in some of the years from 1970-71 to 1989-90 were as high as 75 percent for certain commodities. It was only in the case of IRRI rice and sugarcane that domestic prices were above the world levels during some of the years. When shown as a percentage of the value-added by agriculture, taxes on these four commodities, net of total budgetary subsidies on agricultural inputs, varied from 3.1 percent to 23.6 percent. These tax rates in agriculture compared favourably with the overall tax rates in Pakistan's economy for most of the years. Judged in the light of taxable capacities in agriculture and the Pakistani economy, implicit taxes in agriculture proved to be too high relative to other sectors of the economy.

The abysmally low agricultural commodity prices and the variation across commodities have tended to impair resource use efficiency in agriculture, lessen

growth and employment, and accentuate existing income inequalities. As these trends are directly opposed to the desired goals of economic development, the policy of underpricing of agricultural commodities needs to be abandoned. In the presence of huge implicit taxes, the desired progression in agricultural taxation cannot be introduced with the extension of general income tax to agriculture. Likewise, discontinuation of underpricing of agricultural commodities is likely to release huge resources for investment currently tied to institutional credit for agriculture.

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Comments on "Commodity Taxation and Input Subsidies in Pakistan's Agriculture: A Preliminary Analysis"

The subject of the paper is quite interesting and has assumed added significance in the wake of the intense debate raging in the local press on the issue of taxation of incomes from the agriculture sector. The authors of the paper, under review, have tried to make a forceful case for reducing the tax burden on agriculture via low commodity prices. However, the methodology followed by the authors in calculating the tax burden suffers from conceptual problems, which, I believe, results in exaggerating the tax burden. These problems are discussed below:

(i) The authors, while calculating the tax burden, have used the domestic support prices to value the produce. The support prices are meant to provide minimum guaranteed prices to the producers during the post-harvest season, in the event of market prices falling below this level. The market prices are known to have ruled above the support prices in case of certain commodities. This is especially true in case of cotton where open market prices are estimated to have been higher by more than 40 percent in certain years from the support prices. Thus, use of support prices in the analysis leads to an exaggerated and distorted picture of tax burden;

(ii) To update the incidentals and marketing costs to arrive at the border prices, the authors have extrapolated these incidentals from the given year by using the GDP deflator. This may have resulted in the use of hypothetical figures in the analysis. This could have been easily avoided by using the actual costs involved in the marketing and transporting of the produce which are available from the agencies involved in this context;

(iii) I am afraid that all the incidentals and overhead costs involved in the exports of farm commodities have not been accounted for, resulting in biased estimates. Data reported in the paper suggest that even exports of IRRI rice during the Eighties were subjected to implicit taxation by the Government by way of lower commodity prices. It is worth mentioning that during 1982-83 to 1986-87 prices of coarse rice in the

international market remained quite depressed. Consequently, the exports of coarse rice from Pakistan entailed substantial losses (Rs 68 million to Rs 1043 million per annum) to the Rice Export Corporation. These contradictions in the results of the analysis by the authors and the actual situation basically stem from the use of hypothetical figures on incidentials and under estimation of the costs involved; and

(iv) The authors while treating the input subsidies have relied on the budgetary data and not worked out the economic subsidies involved in this case.

The calculations of nominal protection coefficients for various commodities indicate deviations between border and domestic prices but it may not be the best guide to the subject of estimating the tax burden:

(i) Estimation of border prices, given the limitations of international markets and prices and quality differentials in the farm produce across various countries is at best an estimate; and

(ii) The calculation of these coefficients does not take into account the subsidies on the inputs.

The authors' have argued for providing the domestic farmers prices equivalent to import or export parity to ensure rapid progress, greater employment and better income distribution. Here one has to make a clear distinction between the support and open market prices. Although the trend in international prices could provide useful guidelines for setting the producer prices in the domestic markets but surely one cannot exclusively rely on the international prices for the following reasons:

(i) International trade in farm commodities is not completely free, and the import/export prices of certain countries do not necessary reflect the international price. There is no one international price as such, export prices of exporting countries and import price of importing countries are known as international prices. These prices are very much affected by trade agreements, trade preference, a host of import restrictions and export-promoting measures;

(ii) Agricultural commodities differ in quality with the differences in climatic and soil conditions. Preferences of consumers also create price differentials. These differentials are quite wide ;

(iii) Whatever way international price is defined, it suffers from wide fluc-

tuations. If support price is related to international price only, these fluctuations will also affect the support price. In that case, the support price will become the market price and the farmers exposed to heavy losses in certain situations. Such possibilities are real; and

(iv) The structure of output-input prices and, hence, cost of production differs from country to country. If the output prices are fixed according to the international prices, the input prices will also have to be linked to their international prices without regard to their productivity. This will expose the domestic economy to exogenous inflationary pressures.

From the foregoing it is quite obvious that the use of international prices in setting prices of the farm sector would not be an unmixed blessing.

The paper under review covers a long period during which a number of studies on the subject were carried out. These, *inter alia*, include the studies by Gotsch and Brown (1980); Cheong and D'Silva (1987); Appleyard (1987) and Qureshi (1987). I wish that the authors had compared the results of their analysis with previous studies covering the same period.

Before concluding, I would like to thank the organizers of the Conference for inviting me to participate in the proceedings. This provided me an excellent opportunity not only for the exchange of experiences and ideas but also to meet with many friends.

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